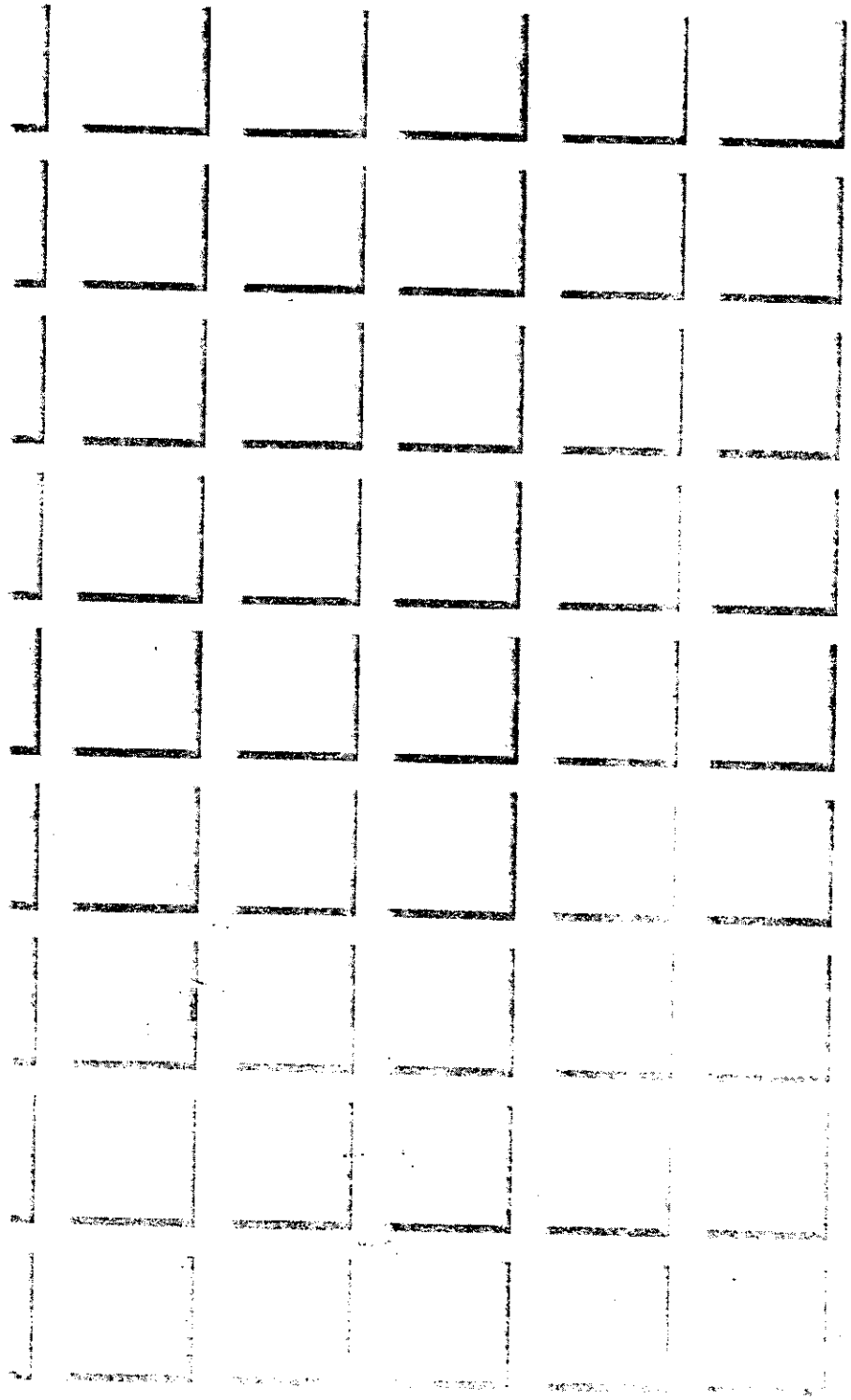


Operating Instructions

Video Cassette Recorder

NV-HD70EA

G-CODE

QT5597

VHS PAL

SUPER DRIVE SYSTEM

Before attempting to connect, operate or adjust this product, please read these instructions completely.

Dear Customer

May we take this opportunity to thank you for purchasing this Panasonic Video Cassette Recorder.

We would particularly advise that you carefully study the Operating Instructions before attempting to operate the unit and that you note the listed precautions.

G-Code Programming System

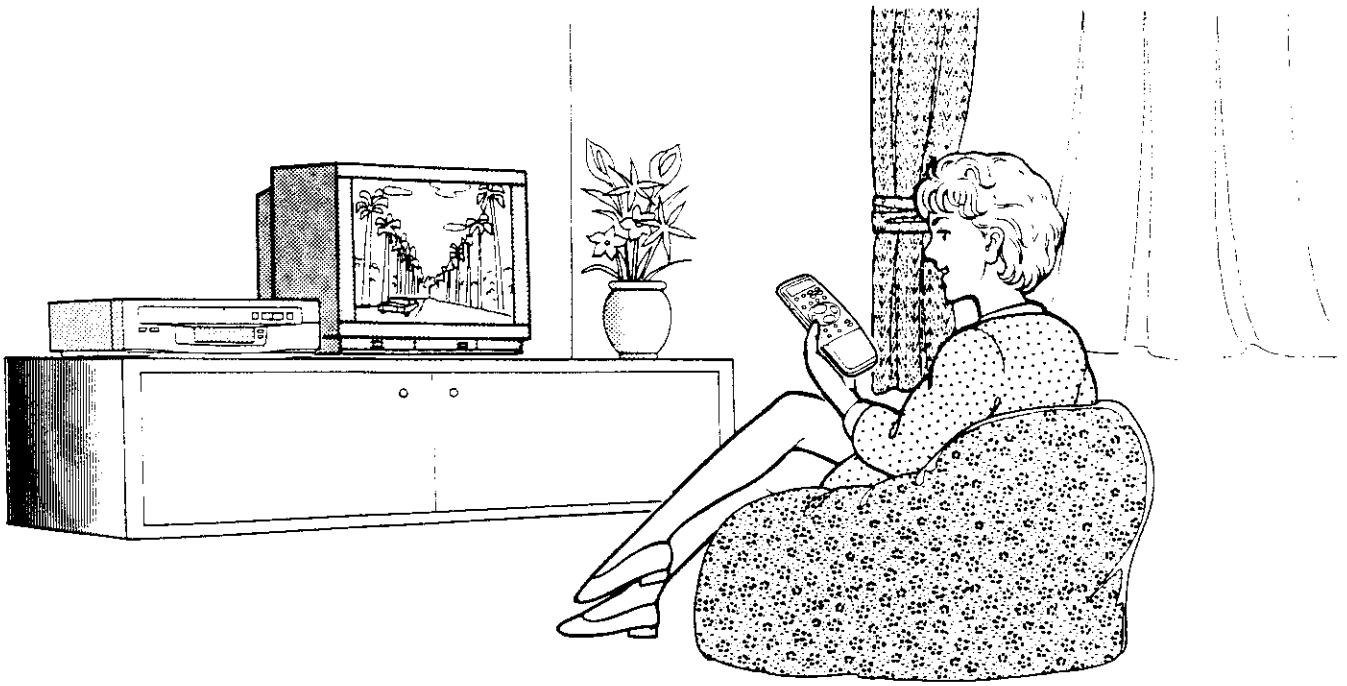
Programming is now easier than ever: simply enter the G-Code number provided in the programme schedule column carried by newspapers and magazines.

- G-Code is a trademark applied for by Gemstar Development Corp. G-Code system is manufactured under licence from Gemstar Development Corporation.

AI Crystal View Control

AI circuit for automatic tape calibration (computer-controlled calibration) and optimizing of playback characteristics.

During playback the contrast of tapes recorded with good level is automatically optimized; when a tape recorded with insufficient level is played back, the noise reduction circuit is activated automatically.



Information for Your Safety

IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

FOR YOUR SAFETY

■ **DO NOT REMOVE OUTER COVER.**

To prevent electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

HQ (High Quality) Picture System

Video recorders carrying the HQ symbol mark feature the new VHS High Quality Picture System. This system assures complete compatibility with VTRs that use the conventional VHS system.

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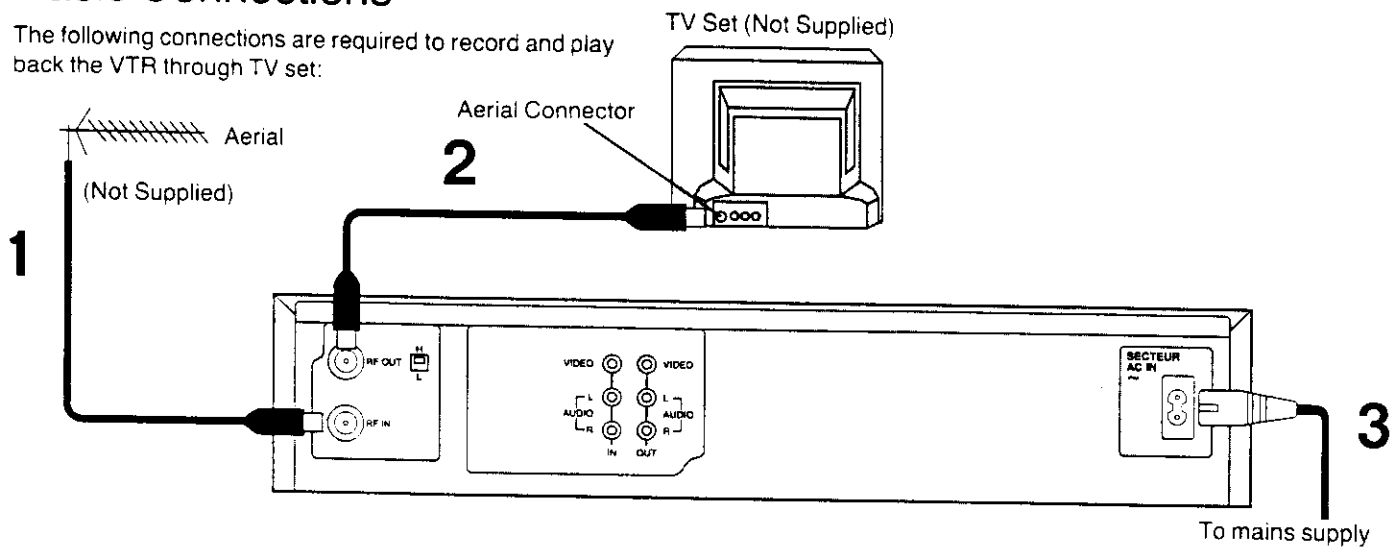
Connections

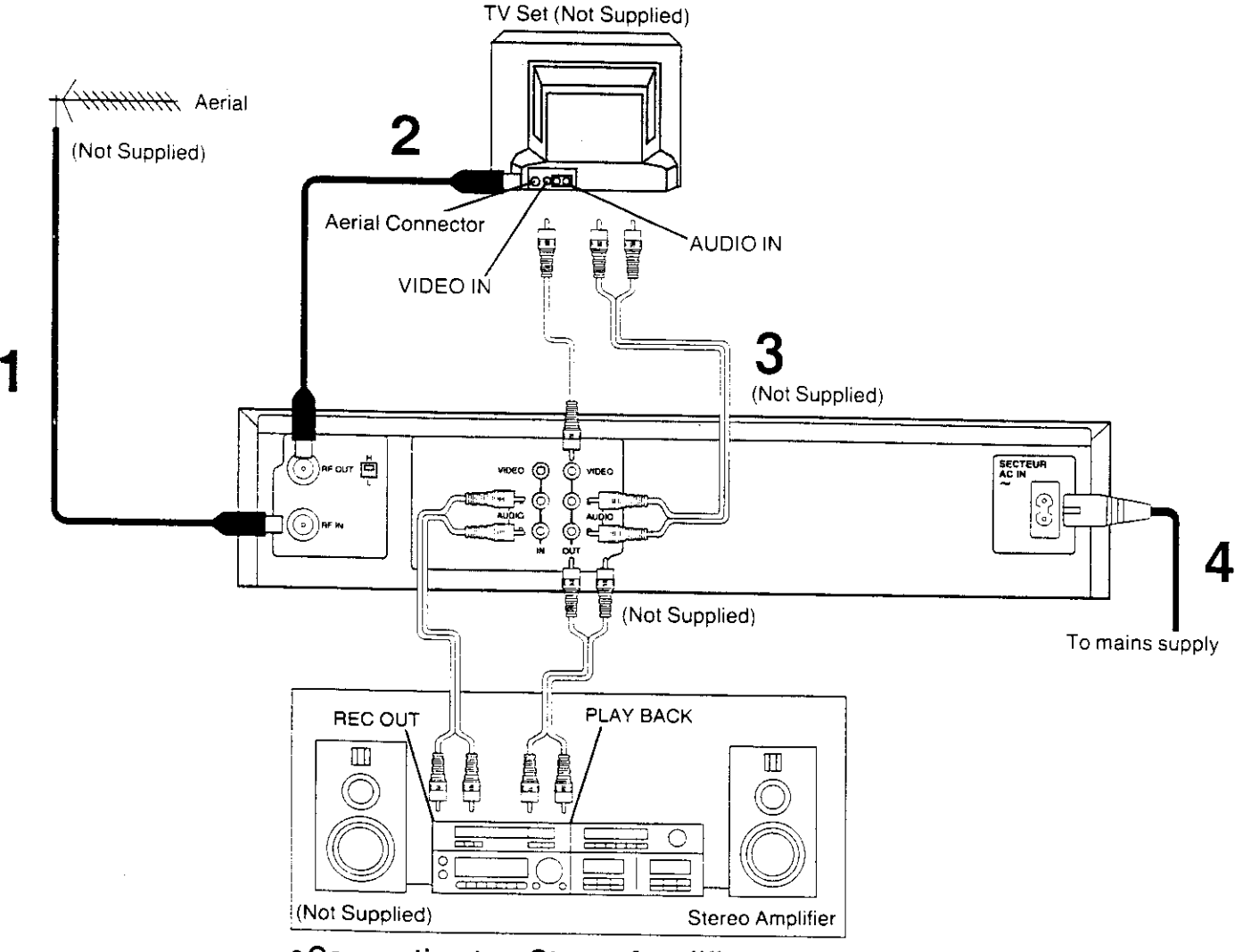
This tells you how to connect with an aerial, TV, etc.

Basic Connections

The following connections are required to record and play back the VTR through TV set:

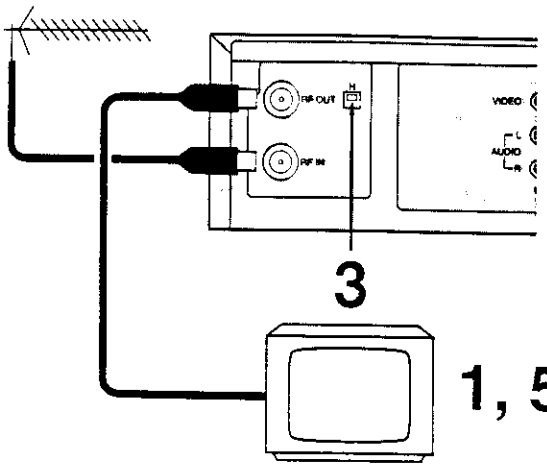


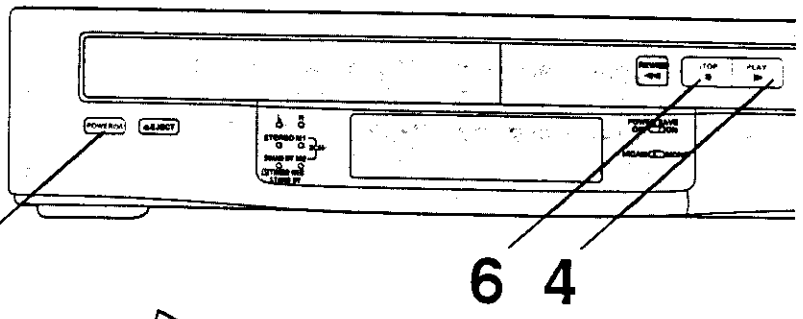
Connection to a TV Set with Audio/Video Input Sockets

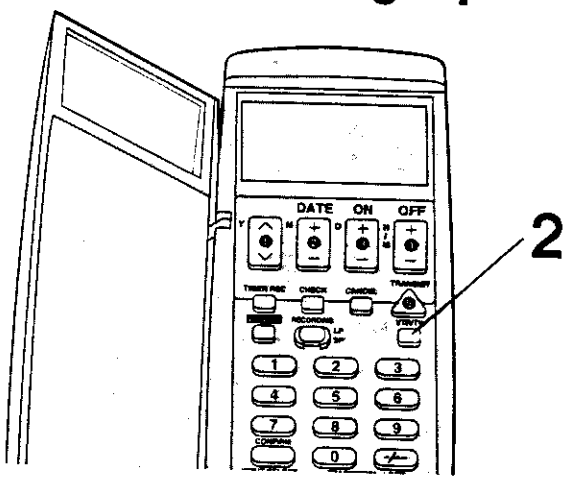


•Connection to a Stereo Amplifier

Tuning the TV to your VTR







The VTR supplies a signal to the TV set via the RF coaxial cable on channel 2 or 3.

It is possible to view the video picture on your TV in the same way that you watch TV broadcasts.

If you have connected the VTR to the TV through the video and audio input sockets then you do not need to follow the procedure mentioned below. Instead, simply select AV mode on the television.

Operations		Display Symbols	
1	POWER⏻/I		Turn on the TV and VTR.
2	VTR/TV	VTR	Select the VTR mode.
3	H L		Select the video playback channel which is not occupied with any TV station. H: Channel 3 L: Channel 2
4	PLAY ▶		Insert a recorded cassette tape and press **PLAY**.
5			Select a programme number on the TV set which you wish to use as the video viewing channel. Then tune in the TV to the picture from the cassette tape currently playing.
6	STOP ■		Stop the playback.

Setting the Clock of the VTR

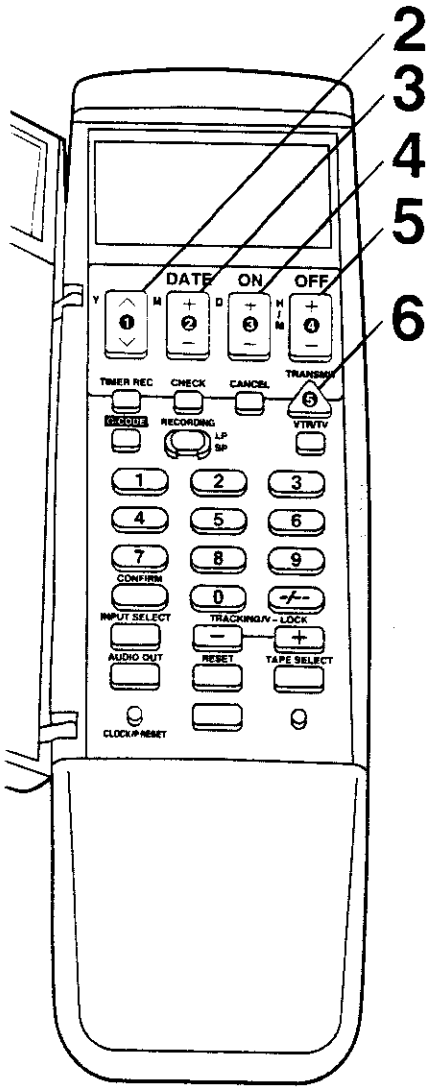
By setting the time on the remote controller's clock and then by transmitting this setting to the VTR, the clocks on both the remote controller and VTR display the same time.
The built-in digital clock employs the 24-hour system.

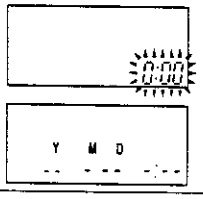
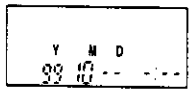
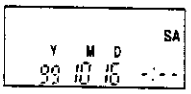
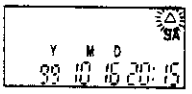
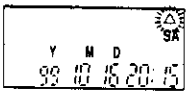
Preparation

- Turn on the VTR.
- Install the batteries in the remote controller. See page 13.

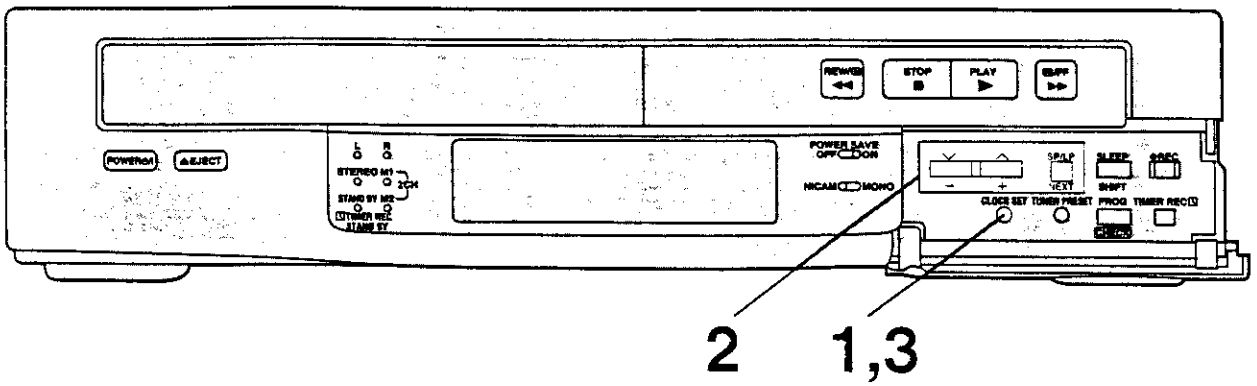
For Example:

Date; 16th, October, 1999
Time; 20:15



Operations	Display Symbols	
1		Open the door of the remote controller.
2		Set **Year** "99".
3 DATE		Set **Month** "10".
4 ON		Set **Date** "16".
5 OFF		Set **Time** "20:15". • When it is kept pressed, the indication changes in 30-minute steps.
6 TRANSMIT		Press **TRANSMIT**.
7		Close the door of the remote controller.

Note:
To change the previous clock setting, press **CLOCK/PRESET** for at least 2 seconds. The previous clock setting will be displayed. Then follow steps **2** to **7** above.



In addition to setting the VTR clock from the remote controller, it can also be set directly from the VTR.

The built-in clock is used to activate the timer for automatic recording and must be set to the correct time.

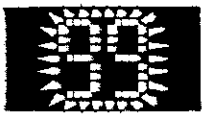
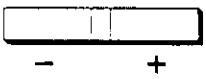
The built-in digital clock employs the 24-hour system.

Preparation

Turn on the VTR.

For Example:

Date; 16th, October, 1999
Time; 20:15

Operations	Display Symbols	
1 CLOCK SET		Keep **CLOCK SET** pressed for more than 2 seconds.
2 Set each item by pressing + or − and **NEXT**.		
		Set **Year** "99".
		Set **Month** "10".
		Set **Date** "16".
		Set **Hour** "20".
NEXT		Set **Minute** "15". • There is no need to press **NEXT**.
3 CLOCK SET		Press **CLOCK SET**. • The clock will start.

Time Reset Function

If the clock is less than two minutes slow or fast, it can easily be reset to the proper time.

For example:

Resetting the clock to 12:00.00

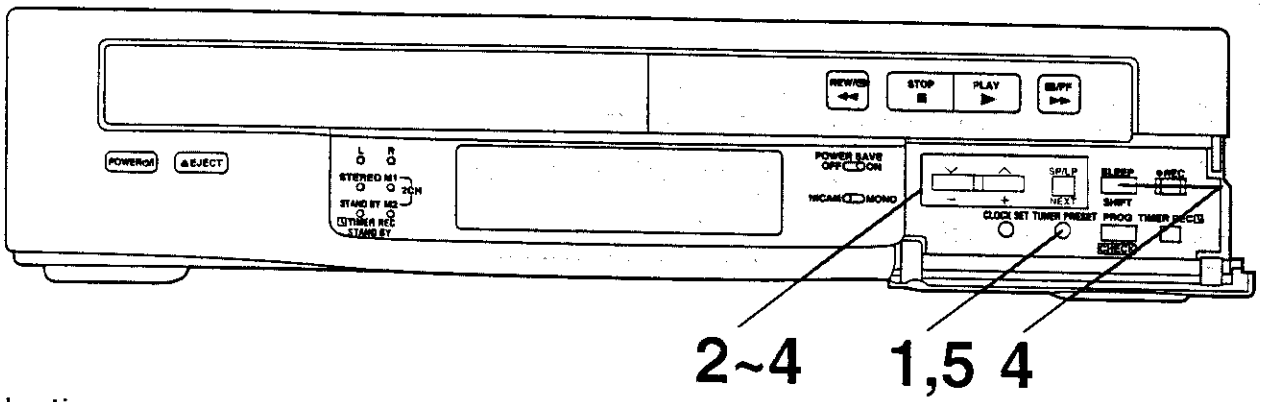
1 Keep **CLOCK SET** pressed at any time between 11:58.00 and 12:01.59 for more than 2 seconds.

2 Press **CLOCK SET** again as soon as you hear the 12:00.00 time signal.

Note:

The clock operates for at least 60 minutes by its backup system in the event of power failure.

Storing TV Broadcasts into your VTR

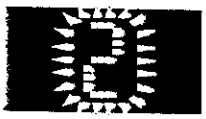


Introduction

The VTR is fitted with its own tuner (just like a normal TV set) and can be pre-set to receive up to 42 TV broadcast stations.

Preparation

- Confirm that the TV is on and the VTR viewing channel is selected.
- Turn on the VTR and select any programme position except A1.
- Press **VTR/TV** to select the VTR mode.

Operations	Display Symbols	
1 TUNER PRESET		Keep **TUNER PRESET** pressed for more than 2 seconds.
2 – + → NEXT		Select the programme position, then press **NEXT**.
3 + → NEXT		Press + to select TV band "I", "III" or "U", then press **NEXT**.
4 – + SHIFT		Search for the required TV station by pressing and holding + or –. Release once the station has been found. • Search speed changes quickly by pressing **SHIFT** simultaneously with + or –. • Press **NEXT** and repeat steps **2–4** for each programme position you want to tune to a station.
5 TUNER PRESET		Press **TUNER PRESET** twice.

Fine Tuning Procedure

1 Keep **TUNER PRESET** pressed for more than 2 seconds, and then press again.

2 Press **NEXT**.

3 Press + or − to obtain the best tuning condition.
- "A" Indicator disappears.
- To return the tuning to its former state, press **SHIFT**.

4 Press **TUNER PRESET**.

Blanking of Unoccupied Programme Positions

1 Keep **TUNER PRESET** pressed for more than 2 seconds.

2 Select a programme position which you do not want to tune to a TV station, by using + or −.

3 Press **SHIFT**. ("−−" is displayed.)
- Repeat steps **2** and **3** for another unoccupied programme positions to skip during the selection of the programme positions.
- To cancel the blanking of a programme position, select that programme position on the VTR and then press **SHIFT**.

4 Press **TUNER PRESET** twice.

Channel Plan

VHF		UHF
I	III	U
1–3	4–11	21–69

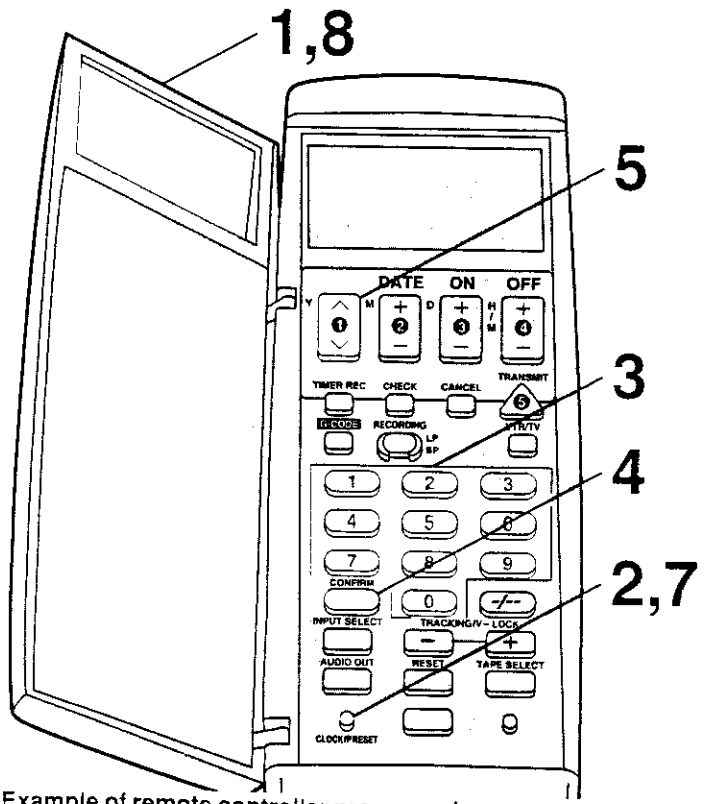
Preparations for G-Code Programming

Setting Up the Remote Controller for the G-Code Programming

Before using for the first time:
It is necessary to programme your G-Code remote controller with your local TV station G-Code identification number and the programme position of your VTR at which those stations are received. This should be done for each TV station for which G-Code programmes are listed. Have a newspaper or magazine on hand which lists today's local TV station programmes and G-Code numbers.

Preparation

- Tune the TV to your VTR. See page 5.
- Set the clock of the VTR. See page 6.
- Store TV broadcasts into your VTR. See pages 8–9.



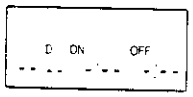
Example of remote controller programming

TV station	Programme position on VTR	Identification Number
TV ONE	1	001
CHANNEL 2	2	002
TV3	3	003
SKY TV MOVIES	4	004
SKY TV SPORTS	5	005

If you do not know the identification number of a TV station for which a G-Code number is supplied, you can determine the identification number by proceeding as follows:

Operations **Display Symbols**

1 Open the door of the remote controller.



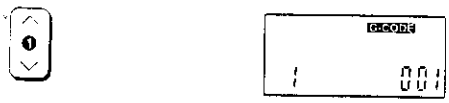
2 Keep **CLOCK/PRESET** pressed for more than 2 seconds and then press it again.

3 Enter a G-Code number listed in newspaper against the first local TV station in your area (say TV1).

- Enter the G-code number which is ahead of the **present time and date**. Otherwise the wrong identification number will be generated.
- If you have entered the wrong number, press **CANCEL** and then enter the proper number.

4 Press **CONFIRM** to set the identification number.

5 Select the programme position of your VTR which receives the TV station you entered at step **3**.

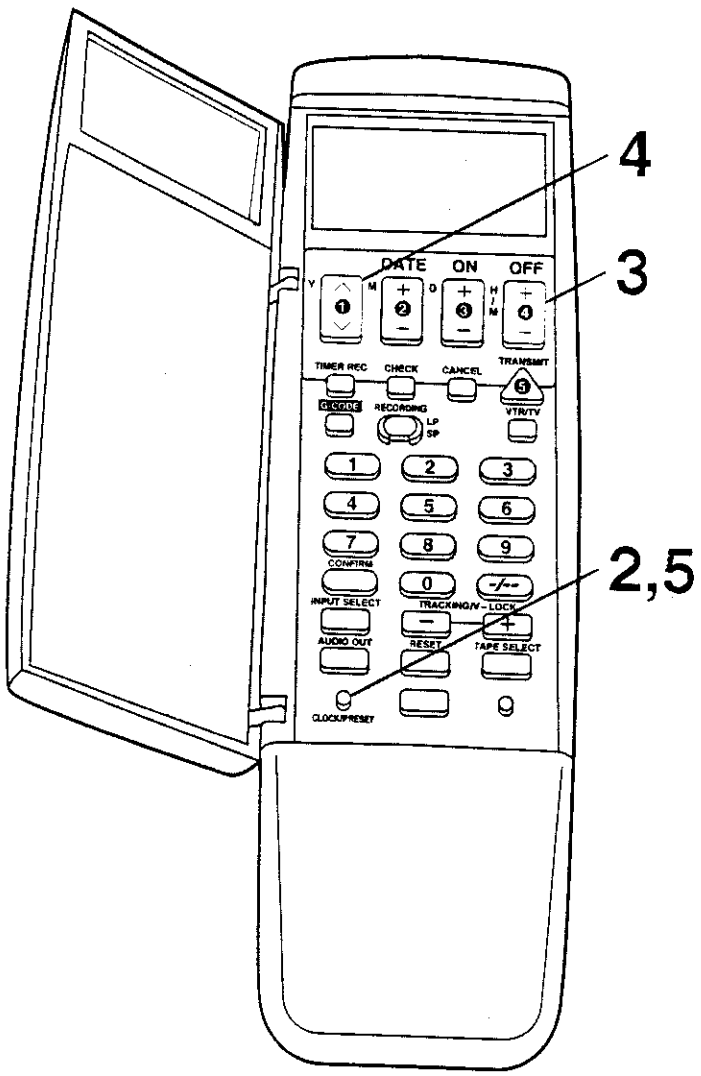


6 Select a G-Code number listed in newspaper against the second local TV station in your area (say TV2) and repeat steps **3–5** until all G-Code stations have been programmed into the remote controller.

7 Press **CLOCK/PRESET** twice.

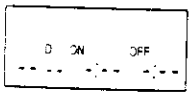
8 Close the door of the remote controller.

If you know the identification number of a TV station for which a G-Code number is supplied, you can set the TV station by proceeding as follows:

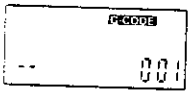


Operations	Display Symbols

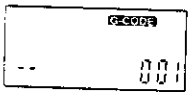
1 Open the door of the remote controller.



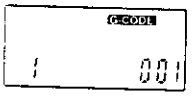
2 Keep **CLOCK/PRESET** pressed for more than 2 seconds and then press it again.



3 Select the identification number (001–255).

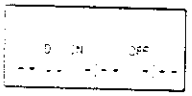


4 Select the programme position (1–42, A1).



- To set the other TV stations, repeat steps 3 and 4.

5 Press **CLOCK/PRESET** twice.



6 Close the door of the remote controller.

Note:

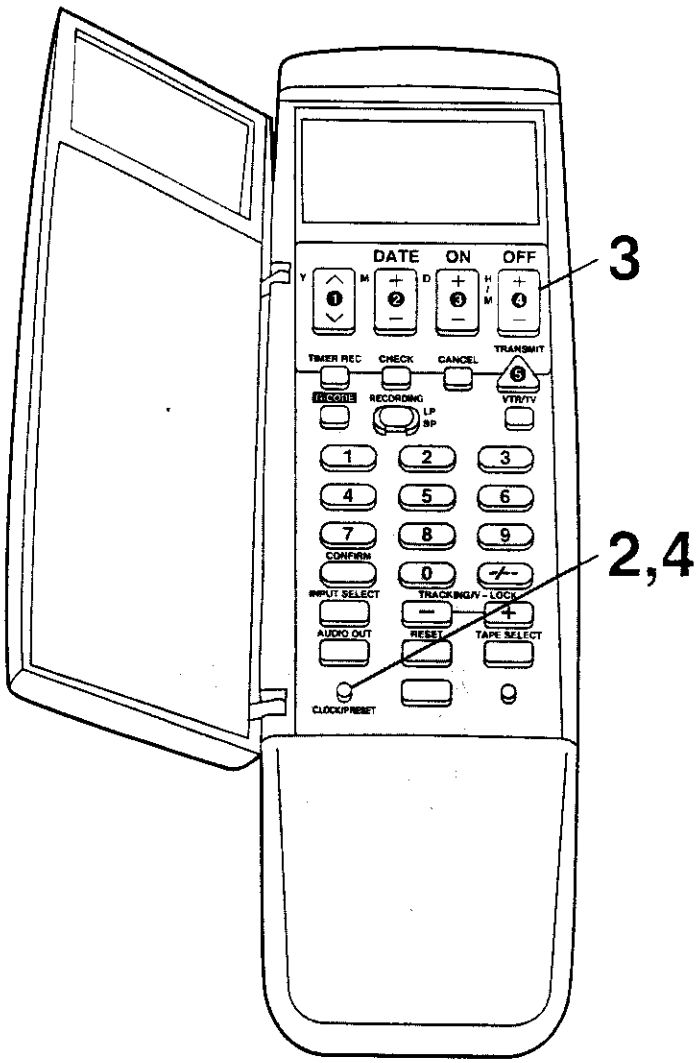
To receive satellite stations, the satellite receiver must be connected to the VTR and programme position must be set depending on the type of the connection made.

A1: When the satellite receiver is connected to the Audio/Video input sockets

- When the satellite receiver is connected by means of the RF coaxial cable, set to a free programme position between 1 and 42.

Setting the Remote Controller for Operation of your TV

You can operate some manufacturer of TVs (see table below) using the supplied remote controller after this setting up.



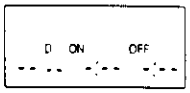
Number	Manufacturer
1	Panasonic
2	
3	
4	
5	GRUNDIG/Blaupunkt
6	PHILIPS
7	SONY

Preparation

- Turn on the TV.
- Install the batteries in the remote controller. See page 13.

Operations **Display Symbols**

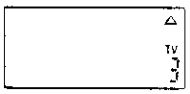
1 Open the door of the remote controller.



2 Keep **CLOCK/PRESET** pressed for more than 2 seconds and then press it twice.

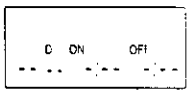
- "TV" now appears on the remote controller's display.

3 Press **OFF** several times.



- When the number matches the manufacturer of your TV, the TV's power is turned off.

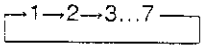
4 Press **CLOCK/PRESET**.



5 Close the door of the remote controller.

How to change the number

Each time the "+" side of **OFF** is pressed, the number is counted up by one as follows:



When the "−" side is pressed, the number is counted down by one in the reverse order to that indicated above.

Note:

Some TV models cannot be operated using this remote controller.

When the number is 1, 2, 3 or 4:

When the TV's power is turned off in step **3** above, turn it back on and adjust the TV's volume using this remote controller. The volume can be adjusted if the number matches the manufacturer of TV.

If it is not possible to adjust the TV's volume, try setting the number (1 to 4) to match the manufacturer of TV again until the volume can be adjusted.

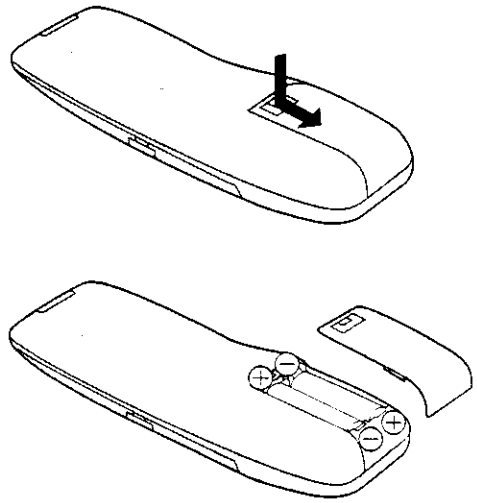
Power Source for the Remote Controller

The remote controller is powered by 2 "AA", "UM3" or "R6" size batteries. The life of the batteries is about one year, although this depends on the frequency of use.

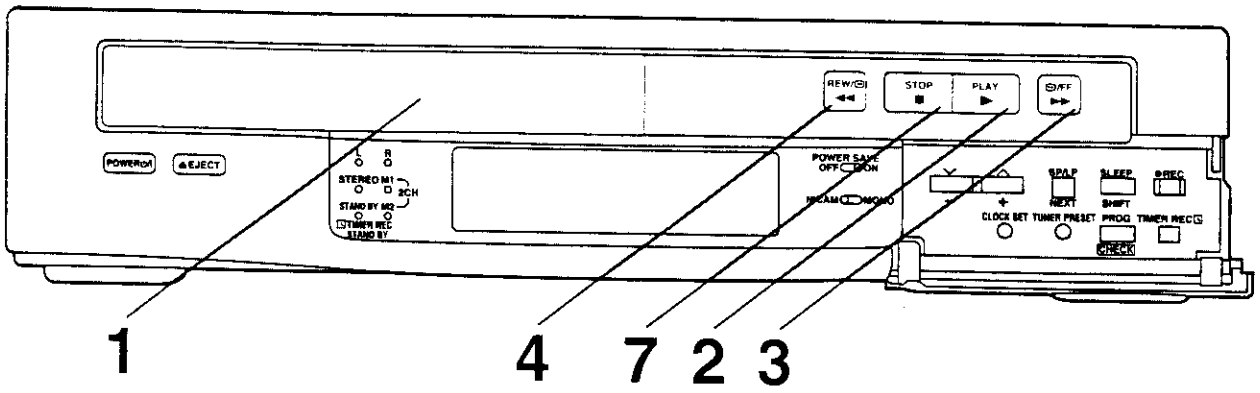
Precautions for Battery Replacement

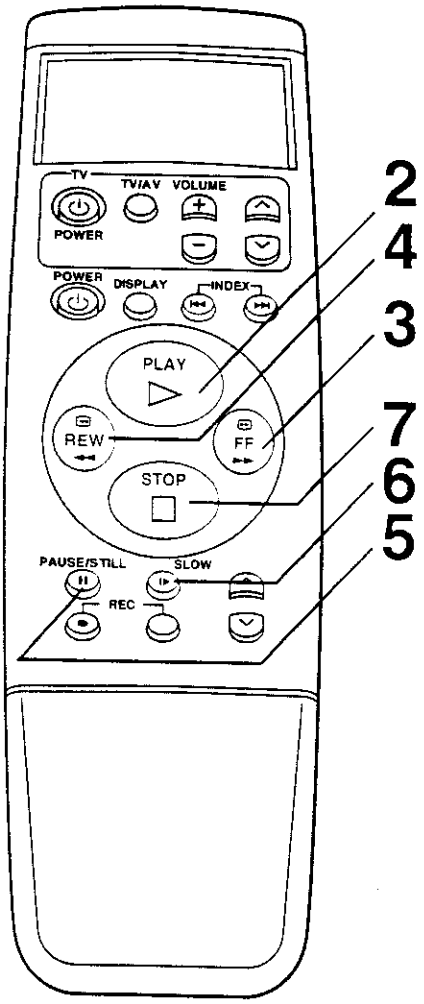
- Load the new batteries with their polarity (⊕ and ⊖) aligned correctly.
- Do not apply heat to the batteries, or an internal short-circuit may occur.
- If you do not intend to use the remote controller for a long period of time, remove the batteries and store them in a cool and dry place.
- Remove spent batteries immediately and dispose of them.
- Do not use an old and a new battery together, and never use an alkaline battery with a manganese battery.

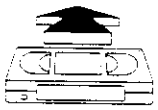
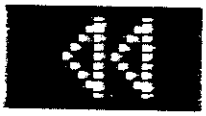
Installing the Batteries



Playback



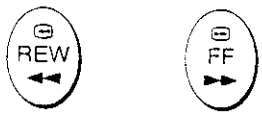


Operations	Display Symbols	
1		Insert a recorded cassette tape.
2 PLAY		Start viewing the picture.
3 FF		Search forward by tapping **FF**. • To change back to normal playback, press **PLAY**.
4 REW		Search backward by tapping **REW**. • To change back to normal playback, press **PLAY**.
5 PAUSE/STILL		View a still picture. • To continue the normal playback, press **PLAY** or **PAUSE/STILL**.
6 SLOW		View the slow motion picture. • To continue the normal playback, press **PLAY**.
7 STOP		Stop viewing the picture.

Other Playback Functions

To obtain High Speed Picture During Fast Forward or Rewind

Keep **FF** pressed during fast forward.
Keep **REW** pressed during rewind.



To find the Beginning of Each Recording

For example:
Searching for the 2nd recorded segment in the forward direction.

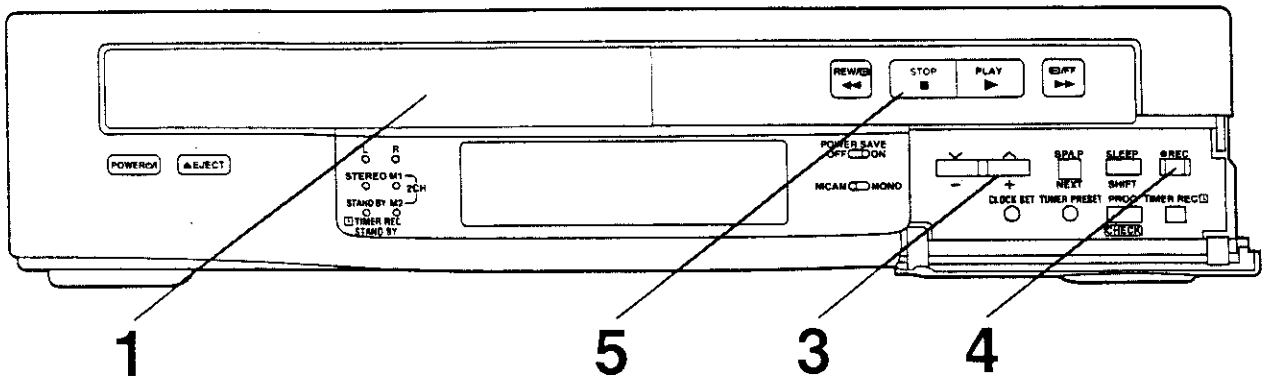
Press **INDEX ▶▶I** twice.

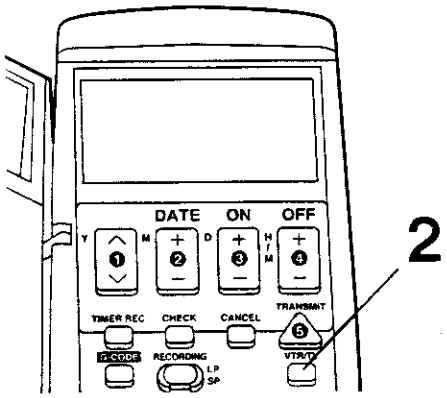
- After finding the specific recorded segment, playback starts automatically.
- For the reverse direction, press **INDEX I◀◀**.
- Up to 20 index signals can be searched for in both directions.
- The figure on the display is decremented by 1 each time an index signal is located.

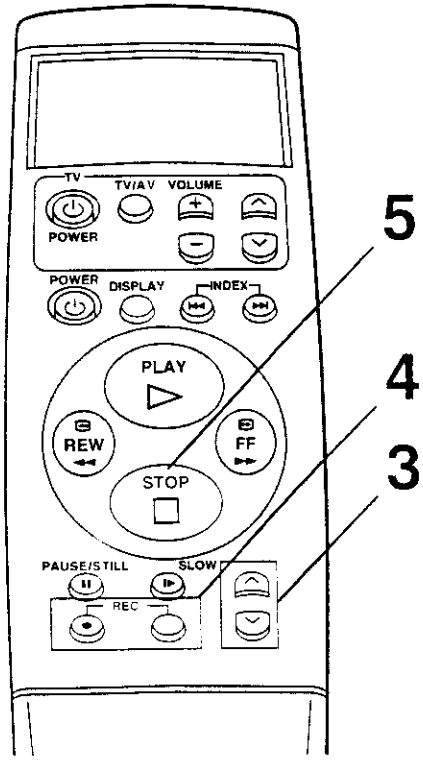
Recording Index Signals
Index signals are recorded in following cases.
- When a recording is started by pressing **REC**
- When **REC** is pressed during recording
- When timer recording is activated

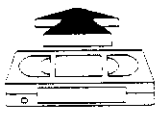
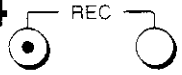
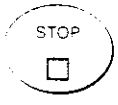
Notes:
- Audio reproduction of linear (conventionally recorded) tapes will be monaural when played back on the FM Hi-Fi video recorders.
- Cue, review or slow playback will be automatically released after 10 minutes, and still playback after 5 minutes.
- The INDEX search function can only work correctly, if the index signals are spaced at least 3 minutes apart in the SP mode and 5 minutes apart in the LP mode.

On-the-spot Recording







Operations	Display Symbols	
1 		Insert a cassette tape. • If it has already been inserted, press **POWER** to turn the VTR on.
2		Select the VTR mode.
3		Select TV station.
4 		Start recording.
5 		Stop recording.

To select the Desired Tape Speed

1 Press **RECORDING SP/LP** to display the tape speed indicator.

2 Keep **RECORDING SP/LP** pressed for more than 2 seconds while the tape speed indicator is displayed, to change the tape speed.

To interrupt Recording

Press **PAUSE/STILL** during recording.
Press again to continue recording.

To record One TV Programme while Viewing Another Programme

1 Refer to the on-the-spot recording operations steps 1 to 4.

2 Press **VTR/TV** to select the TV mode.

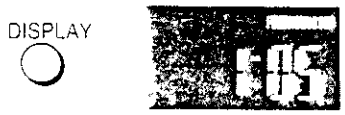
3 Select the TV programme on your TV set you wish to view at the present time.

To display the Approximate Remaining Tape Time

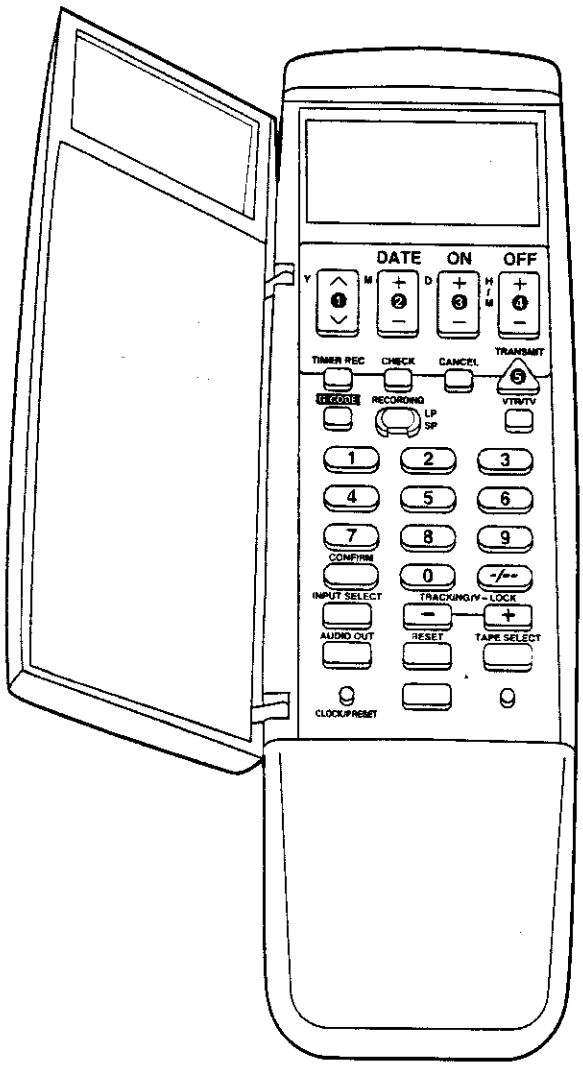
1 Press **TAPE SELECT** to select the corresponding cassette tape length.

E195: For E30, -60, -80, -120, -180 and -195 tapes
E240: For E240 tape
E260: For E260 tape

2 Press **DISPLAY**.



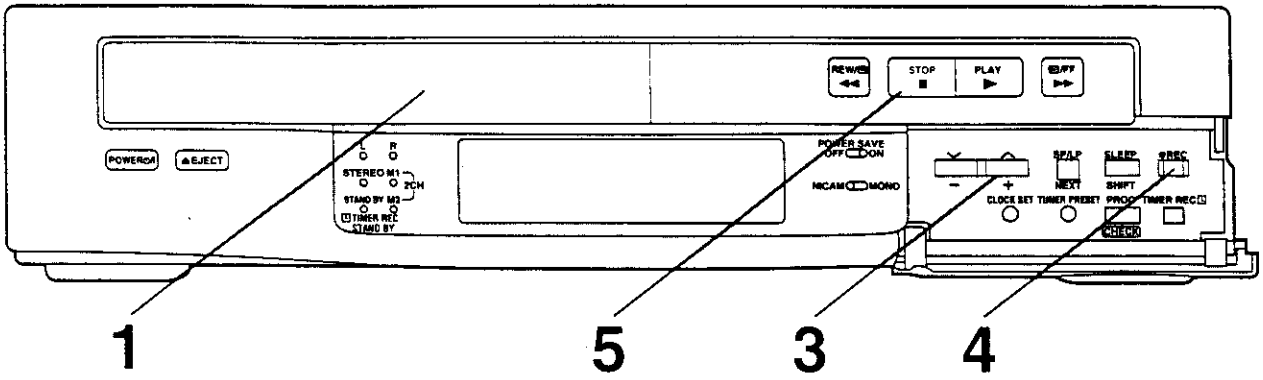
→ Clock → Counter → **Remaining Tape Time** →

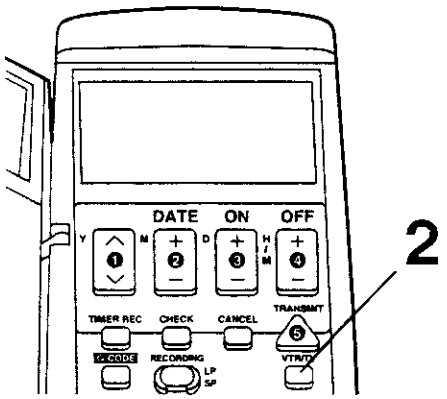


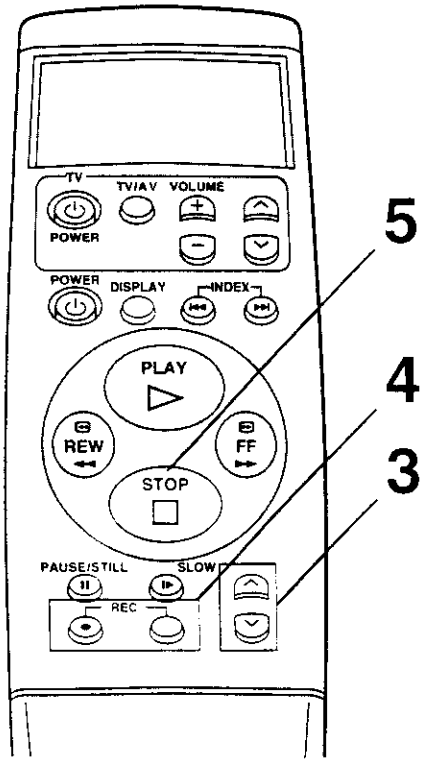
Notes:

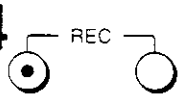
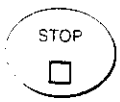
- When a video cassette with a broken off tab is inserted, the "CTO" indication will flash to indicate that recording is not possible.
- The recording pause mode will be automatically released after 5 minutes, and be back to the stop mode.

On-the-spot Recording







Operations	Display Symbols	
1		Insert a cassette tape. • If it has already been inserted, press **POWER** to turn the VTR on.
2		Select the VTR mode.
3		Select TV station.
4		Start recording.
5		Stop recording.

To select the Desired Tape Speed

1 Press **RECORDING SP/LP** to display the tape speed indicator.

2 Keep **RECORDING SP/LP** pressed for more than 2 seconds while the tape speed indicator is displayed, to change the tape speed.

To interrupt Recording

Press **PAUSE/STILL** during recording.
Press again to continue recording.

To record One TV Programme while Viewing Another Programme

1 Refer to the on-the-spot recording operations steps **1** to **4**.

2 Press **VTR/TV** to select the TV mode.

3 Select the TV programme on your TV set you wish to view at the present time.

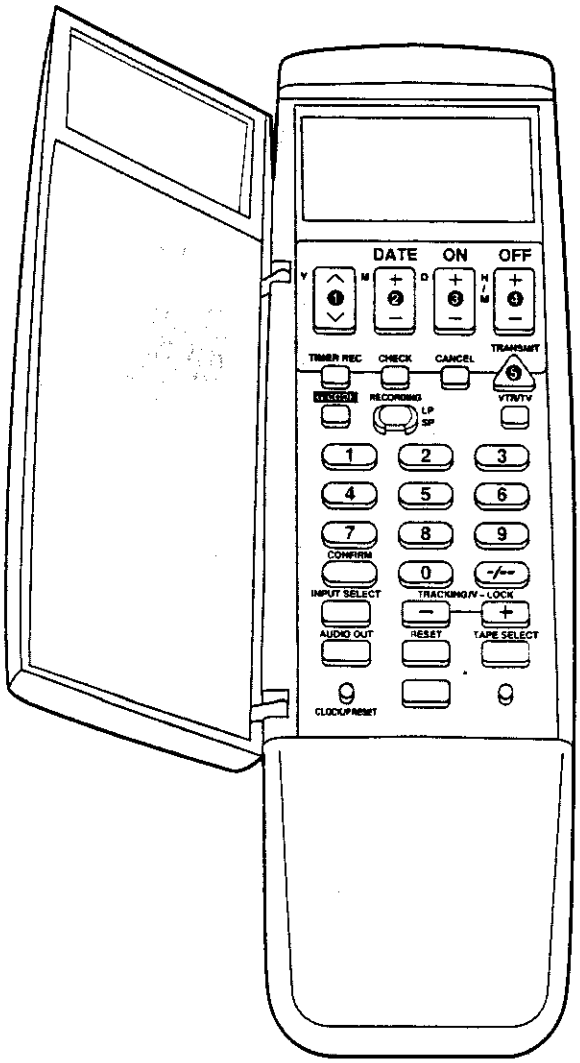
To display the Approximate Remaining Tape Time

1 Press **TAPE SELECT** to select the corresponding cassette tape length.

E195: For E30, -60, -80, -120, -180 and -195 tapes
E240: For E240 tape
E260: For E260 tape

2 Press **DISPLAY**.

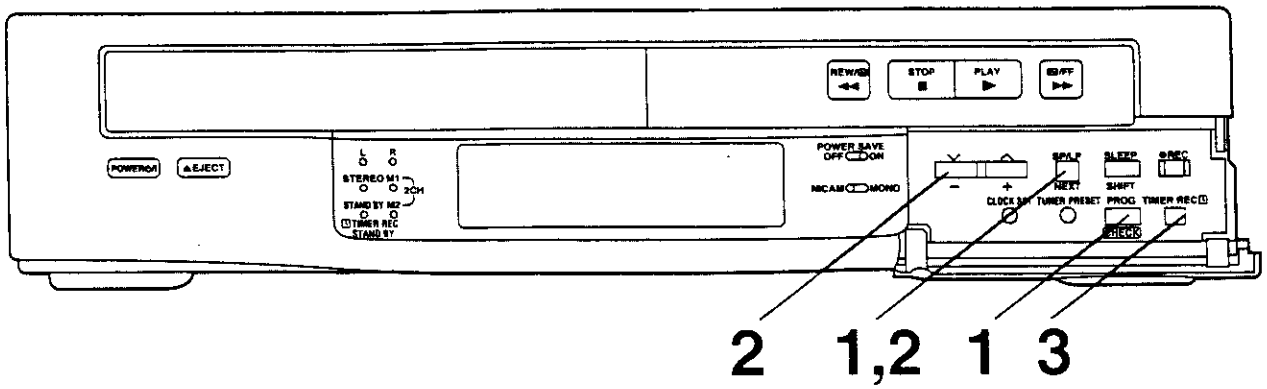
→ Clock → Counter → **Remaining Tape Time** →



Notes:

- When a video cassette with a broken off tab is inserted, the "📼" indication will flash to indicate that recording is not possible.
- The recording pause mode will be automatically released after 5 minutes, and be back to the stop mode.

Timer Recording



Up to 8 timer programmes can be recorded up to one month in advance by setting the timer.

Preparation

Insert a cassette tape with an intact erasure prevention tab.

For Example:

Timer Programme number:	1
Programme position (channel);	2
Date;	27th, October
Starting time:	20:02
Ending time:	21:30
(Present date:	16th October)

Operations	Display Symbols	
1 PROG → CHECK / NEXT		Select **Timer Programme number** "1", and then press **NEXT**. **P1** – – – – – – –: When nothing is programmed **P1** : When something has already been programmed
2 Set each items by pressing + or – and **NEXT**.		
– +		Set **Programme position** (channel) "2".
		Set **Date** "27".
		Set **Starting time** (hour) "20".
↓		Set **Starting time** (minute) "02".
		Set **Ending time** (hour) "21".
NEXT		Set **Ending time** (minute) "30". • There is no need to press **NEXT**.
3 TIMER REC		To activate timer recording, press **TIMER REC**.

Timer Recording from External Signal Source

If Timer Recording is performed by a unit connected to the Audio/Video input sockets, select the A1 indicator for the programme position.

Selecting the Desired Tape Speed

After step **2**, press **NEXT** and select SP or LP by pressing + or −.

Setting other Programmes in Succession

Repeat steps **1** and **2**.

Checking a Timer Programme

Select the timer programme number to be checked by pressing **CHECK/PROG** while the timer recording function is on.

Cancelling a Timer Programme

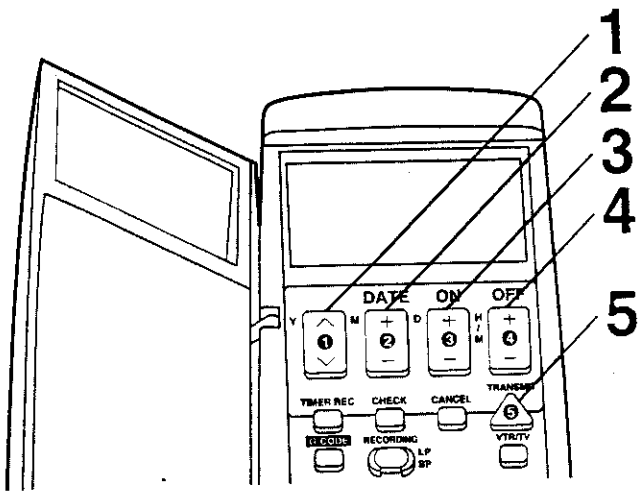
1 Press **TIMER REC** to turn off the timer recording function.

2 Select the timer programme number to be canceled by pressing **CHECK/PROG**.

3 Press + and − simultaneously for more than 3 seconds.

Note:
If a timer recording is not performed to the end (due to insufficient tape or cancellation by the user), the programmed timer recording data will be cancelled from the memory by 4 a.m. two days later.
However, if the Timer Record Function is activated at that time, the programmed timer recording data will be cancelled at 4 a.m. the next day.

Using the Remote Controller

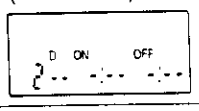
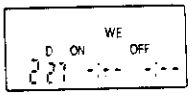
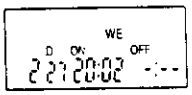
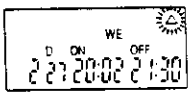


For Example:

Programme position (channel); 2
Date; 27th, October
Starting time: 20:02
Ending time; 21:30

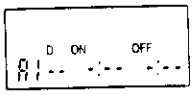
Preparation

- Insert a cassette tape with an intact erasure prevention tab.
- Open the door of the remote controller.

Operations	Display Symbols
1 Set Programme position (channel) "2".	
2 Set Date "27".	
3 Set Starting time "20:02". • When it is kept pressed, the indication changes in 30-minute steps.	
4 Set Ending time "21:30".	
5 Press **TRANSMIT**.	
6 Close the door of the remote controller.	

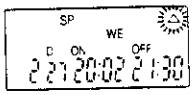
Timer Recording from External Signal Source

If Timer Recording is performed by a unit connected to the Audio/Video input sockets, select the A1 indicator in step 1 for the programme position.



Selecting the Desired Tape Speed

Press **RECORDING SP/LP** in any of steps **2–4**.



Checking a Timer Programme

- The timer recording indicator "⏲" is lit.

Press **CHECK** repeatedly until the desired timer programme number is displayed.

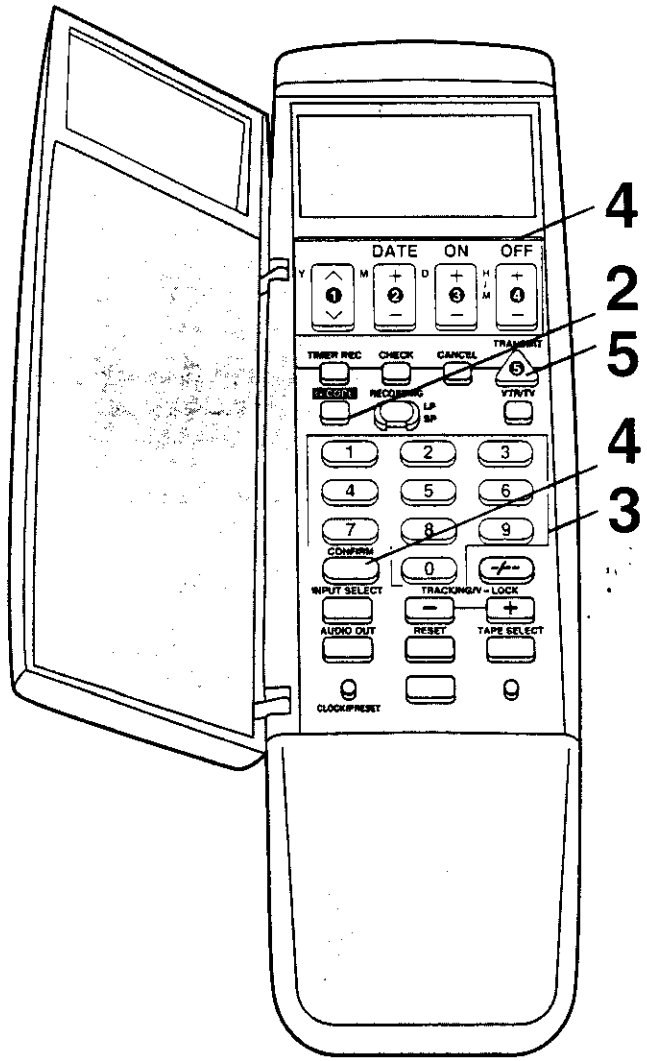
Cancelling a Timer Programme

1 Press **CHECK** repeatedly until the desired timer programme number is displayed.

2 Press **CANCEL**.

G-Code Programming

Programming is now easier than ever: simply enter the G-Code number provided in the programme schedule column carried by newspapers and magazines.
G-Code numbers are numbers which are assigned to each programme listed in the TV programme schedule carried in newspapers and TV guides. When these numbers are entered and **TRANSMIT** is pressed, the numbers are converted into the actual programming and sent to the VTR.

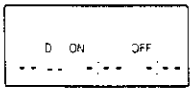


Preparation

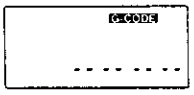
- Insert a cassette tape with an intact erasure prevention tab.
- Set the programme positions on both the VTR and remote controller as shown on pages 8–11.

Operations — Display Symbols

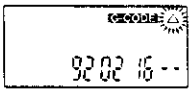
1 Open the door of the remote controller.



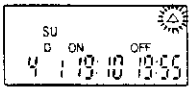
2 Press **G-CODE**.



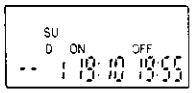
3 Enter a G-Code number.
Example: 920216



4 Press **CONFIRM** to check that the number corresponds to the right programme.



- If the display looks like this:



then please check "**Preparations for G-Code Programming**" on pages 10 and 11. The TV station selected by identification number and VTR tuning position have not been correctly set up in the remote controller.

- To make any corrections, use buttons ❶~❹.

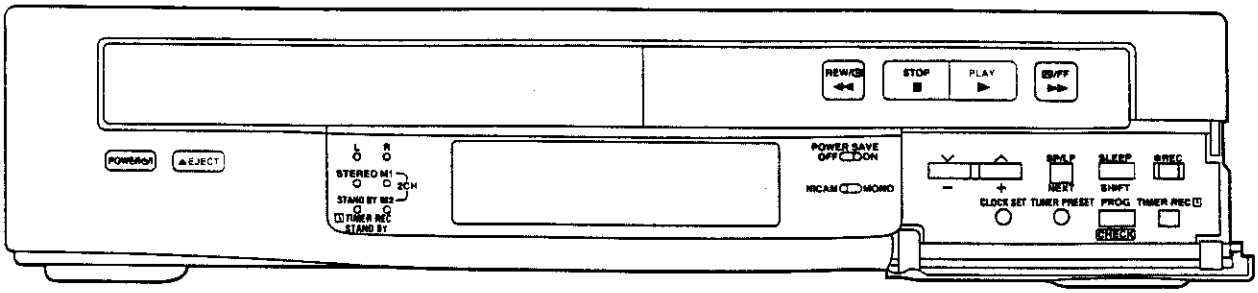
5 Press **TRANSMIT**.

6 Close the door of the remote controller.

Notes:

- To select the desired tape speed, press **RECORDING SP/LP** in any of steps **3–4**.
- When the G-Code number is used for programming, the recording time may be slightly longer than the actual programme time.
- Repeat steps **2** to **4** if "Err" appears on the remote controller.
- When programming two or more programmes, repeat steps **2** to **5** after pressing **TRANSMIT**.
- The procedures for checking and cancelling whatever has been programmed are the same as for remote control programming.

Other Functions



Automatic VTR off time setting

Press **SLEEP** for the desired time.

- Each press gives a 30 minutes time span up to 9 hours.
- To cancel the setting time, press **SLEEP** repeatedly to set 0:00.

NTSC Playback

Tapes recorded in the NTSC system can be played back with this VTR via a PAL system TV set.

A note about NTSC playback on PAL TV

On some TVs, the playback picture may roll up or down: adjust this using the V-HOLD control on the TV. TVs not equipped with a V-HOLD control cannot correct this condition. The playback picture will shrink vertically, and black bars will appear both on the top and bottom of the screen. This is not an indication of a malfunction.

- During Cue, Review, Still or Slow playback, the picture may not be in colour.
- Recording in the NTSC system is not possible with this VTR.
- This function is designed only to allow the playback of tapes recorded by NTSC signals on a PAL system TV. The NTSC signal is not completely converted to a PAL signal. For this reason, images played back by this function cannot be recorded on another VTR.

Other Automatic Functions

Automatic Playback

When a cassette without an erasure prevention tab is inserted, the VTR starts playback automatically.

VTR-off Playback

When the VTR is off, an inserted cassette can be played back by pressing **PLAY**.

Automatic Rewinding

When the tape reaches its end during recording (except for timer recording) or playback, it will automatically be rewound to the beginning.

Automatic Switching Off and Ejection

When the VTR is switched off, an inserted cassette can be ejected simply by pressing **EJECT**. The VTR will eject the cassette and automatically turn itself off again.

The NICAM Broadcast System

NICAM is a 2 Channel sound broadcast system to provide either a high quality stereo sound track or 2 independent MONO sound tracks, M1 and M2.

NICAM programmes are always accompanied by standard sound broadcasts and you can select the desired sound with **NICAM/MONO** (when recording) or with **AUDIO OUT** (when playback).

The NICAM digital stereo sound can only be recorded on the Hi-Fi audio track.

When a stereo, dual-soundtrack or mono NICAM programme is being received, the indicators are lit to inform you of the type of broadcast.

Reception of a NICAM Stereo Broadcast

When the STEREO indicator is lit, set **NICAM/MONO** to NICAM to be able to record on the Hi-Fi sound track in stereo.
The Audio cable must also be connected to a stereo TV in order to hear the NICAM sound in stereo.

Reception of a NICAM Dual-Sound Broadcast

When the M1 and M2 indicators are lit, set **NICAM/MONO** to NICAM if you want to record both channels on the Hi-Fi sound track. M1 is the left-hand channel and M2 is the right-hand channel.

Reception of a NICAM Monaural Broadcast

When a NICAM monaural broadcast is being received, only the M1 indicator is lit. To hear such a signal on both channels and to record it on both channels of the Hi-Fi track, set **NICAM/MONO** to NICAM.

- To record the regular sound (ordinary normal sound) on the FM audio tracks when a NICAM programme is received, set **NICAM/MONO** to MONO.

Important Note for the NICAM System:

When this VTR tuner is switched on, it will automatically switch to a NICAM broadcast, if NICAM is being transmitted. During test transmissions, it is possible that the sound received doesn't correspond to the picture being viewed. In order to receive a synchronized sound and picture, select monaural sound with either **AUDIO OUT** or with **NICAM/MONO**. This will only apply until NICAM transmissions are fully operational.
At this time the NICAM signal is transmitted on stereo channels only, since the M1 and M2 formats are not yet available. Even if the soundtrack is in MONO the stereo indicator will remain illuminated.

Editing

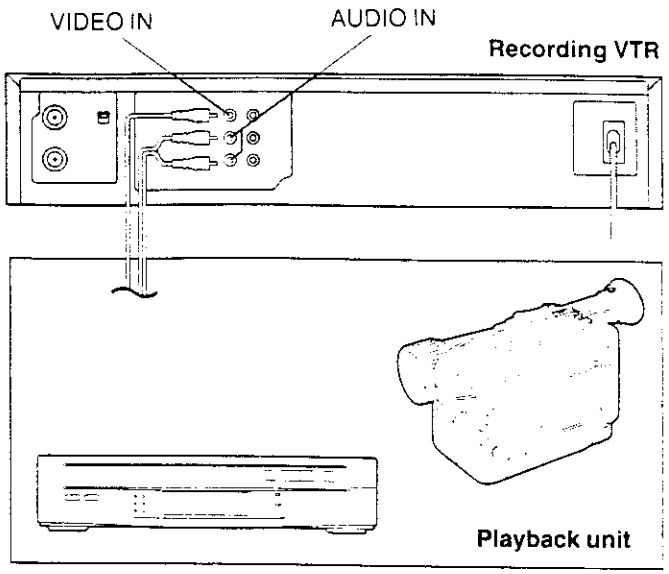
Assembly Editing

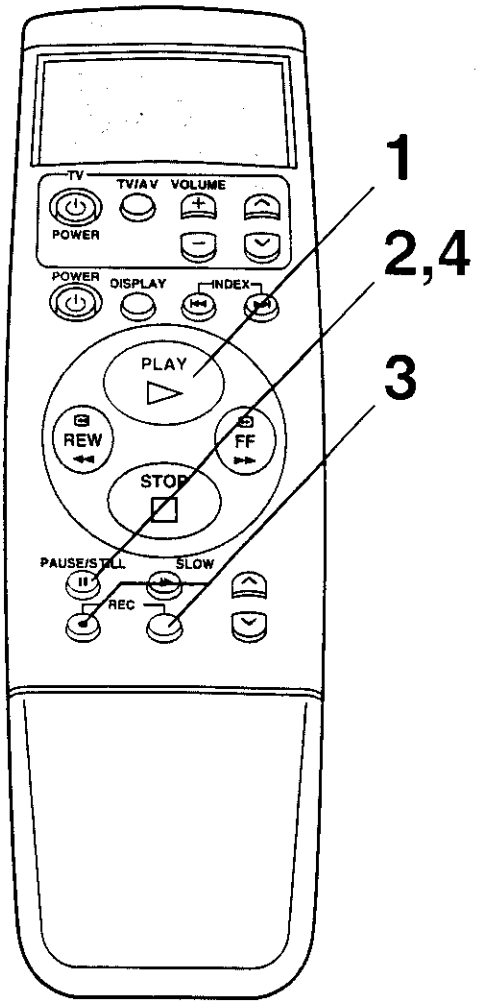
This function can be used to make up an edited tape from other recordings or video sources.

This enables you to record a new segment immediately after a previously recorded segment.

Preparation

- Connect a movie camera or another VTR to this VTR as shown.
- Insert a recorded cassette tape with an intact erasure prevention tab.
- Select the video source required by pressing **INPUT SELECT** to set A1.



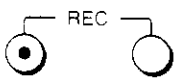


Operations

1 Search for the end of the previous recording.

2 Press **PAUSE/STILL**.

3 Press **REC** to switch the VTR from the pause mode to the recording standby mode.

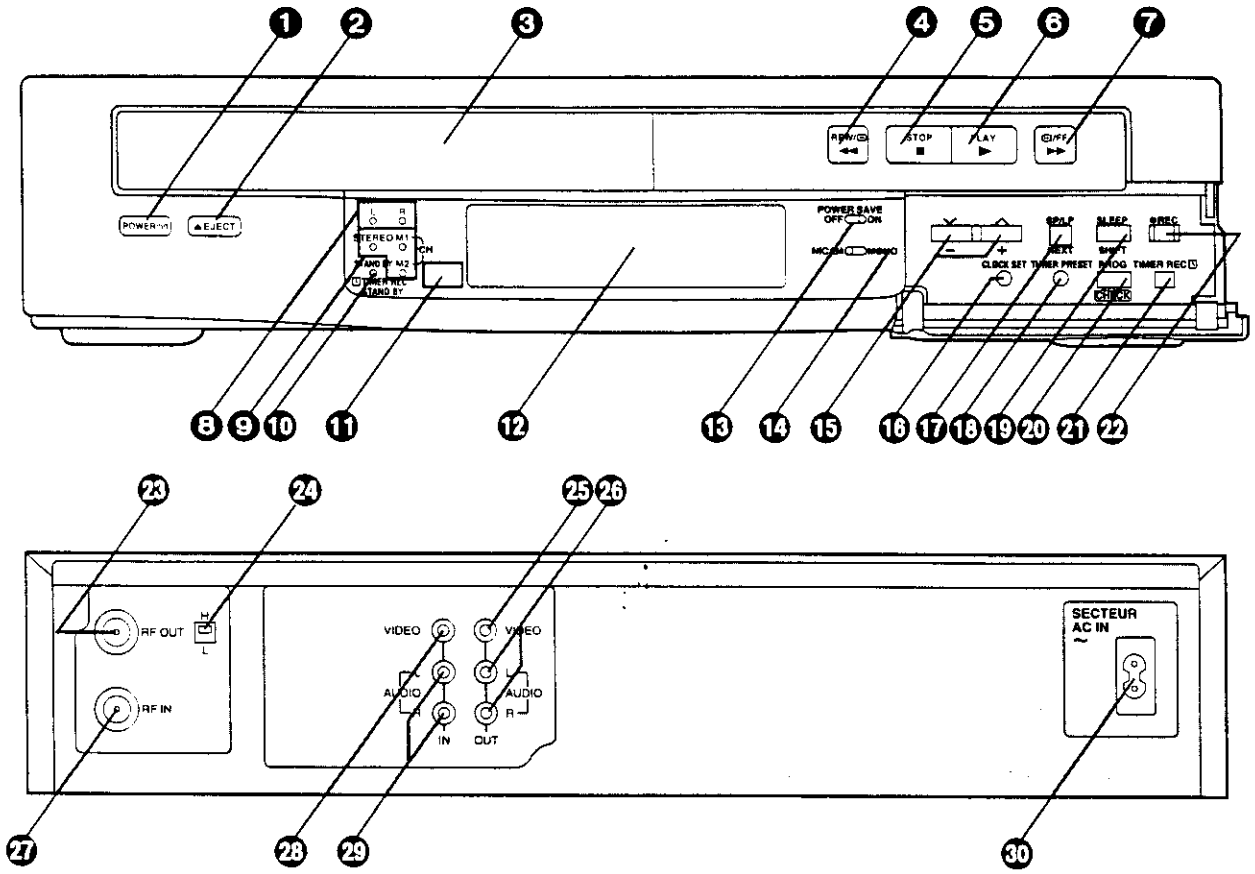


4 Start the new recording by pressing **PAUSE/STILL** again.

Note:
The new sound will be recorded on both the normal and Hi-Fi sound tracks, only monaural sound recording is possible on the normal sound tracks.

Controls and Connection Sockets

This gives a detailed explanation of the function of each button, switch and connection socket.



❶ POWER ⏻/I
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still connected to the mains.

❷ EJECT
To eject a video cassette.

❸ Cassette Compartment
Insert a video cassette here.

❹ REW (REWIND)
In the stop mode: To rewind the tape.
In the playback mode: To search backward.
In the rewind mode: To obtain high speed picture.
"◁◁" is lit.

❺ STOP
To stop any playback or recording.

❻ PLAY
To start playback. "▷" is lit.

❼ FF (FAST FORWARD)
In the stop mode: To fast forward the tape.
In the playback mode: To search forward.
In the fast forward mode: To obtain high speed picture.
"▷▷" is lit.

❽ Audio Output Mode Indicators
The Left (L) and Right (R) Indicators show which sound mode is selected in the following way.

Stereo: Both the Left (L) and Right (R) Indicators are lit.
Left: The Left (L) Indicator is lit.
Right: The Right (R) Indicator is lit.
Normal: Both the Left (L) and Right (R) Indicators are not lit.

❾ Indicator Lamps for M1, M2 and Stereo Reception
When receiving a TV programme, the type of sound system is automatically indicated when a TV programme is broadcast with the NICAM sound system.

❿ STAND BY/TIMER REC STAND BY Indicator
Lights up green while the POWER SAVE Switch is at "ON" provided that the VTR is connected to the AC mains power and its power is off.
This indicator lights up red while the timer recording function is on.

⓫ Infra-red Remote Control Receiver Window

⓬ Display

⑬ **POWER SAVE**
OFF: For normal VTR operation
Characters appear on the display even when the VTR's power is off.
ON: For operating the VTR in the power-saving mode
No characters appear on the display when the VTR's power is off.

⑭ **NICAM/MONO**
NICAM: Normally set at this position.
MONO: Only set at this position to record the normal sound during a NICAM broadcast or if the stereo sound is distorted due to inferior reception conditions.

⑮ ∨ ∧/− +
To select the required programme position (TV station).
To set the clock and timer recording.

⑯ **CLOCK SET**
To set the time.

⑰ **SP/LP/NEXT**
To select the tape speed required for recording.
SP gives the best picture quality.
LP gives the longest recording time.
To proceed to the next item during setting procedure.

⑱ **TUNER PRESET**
To initiate TV station settings for the tuner.

⑲ **SLEEP/SHIFT**
To set the time to turn off the VTR automatically.
To blank unoccupied programme position.

⑳ **PROG/CHECK**
To select a timer programme number.
"P1, P2, P3...or P8" is lit.
To display details of preset timer recording while the timer recording function is on.

㉑ **TIMER REC**
To turn the timer recording function on and off.
◷ is lit or not lit.
Once operating timer recording function, the normal VTR operation is not possible unless this button is set to off.

㉒ **REC**
To start a recording.

㉓ **RF OUT**
To connect to the aerial terminal on a TV set.

㉔ **Video Playback Channel Selector**
To select the video playback channel.

㉕ **VIDEO OUT**
To connect the video cable to a TV or another video recorder.

㉖ **AUDIO OUT**
To connect the audio cable to a TV or another video recorder.

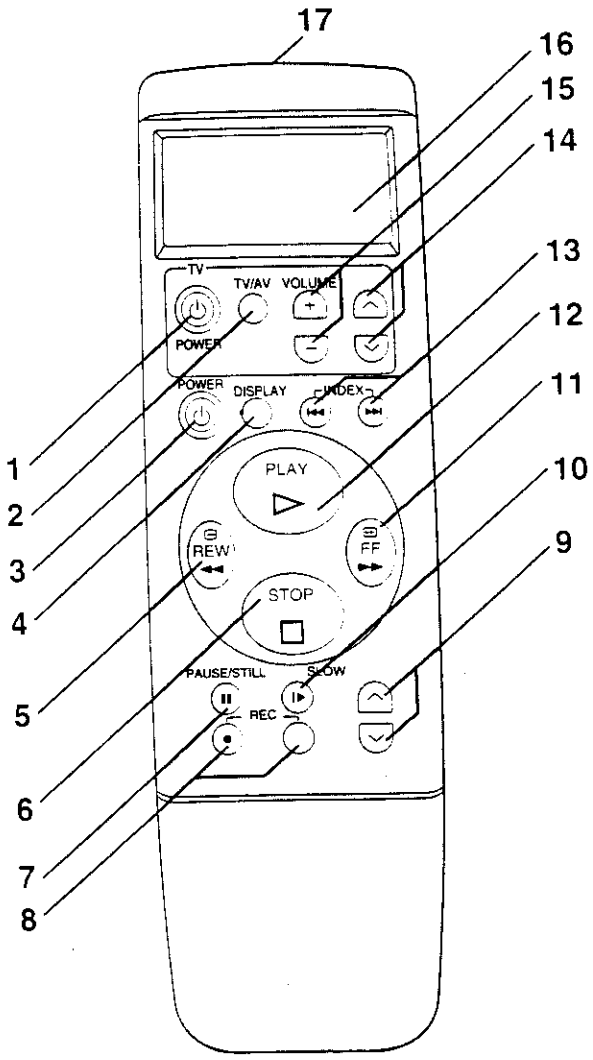
㉗ **RF IN**
To connect to the external aerial.

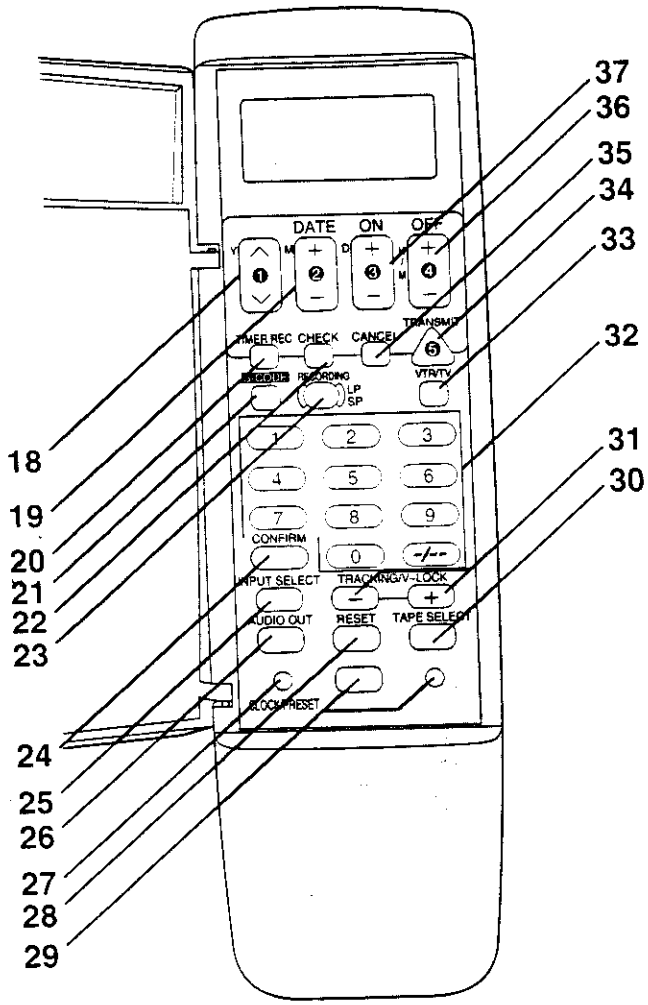
㉘ **VIDEO IN**
To connect the video cable to a movie camera or another video recorder.

㉙ **AUDIO IN**
To connect the audio cable to a movie camera or another video recorder.

㉚ **AC IN~**
To connect to the main power supply.

Infra-red Remote Controller





1 POWER (TV)
To switch the TV from on to standby mode or vice versa. In standby mode, the TV is still connected to the mains.
- With some TV models, it may only be possible to switch the TV to standby mode using this button.

2 TV/AV
To select the TV input.

3 POWER (VTR)
To switch the VTR from on to standby mode or vice versa. In standby mode, the VTR is still connected to the mains.

4 DISPLAY
To change the indication on the VTR Display.
→Clock→Counter→Remaining Tape Time

5 REW (REWIND)
In the stop mode: To rewind the tape
In the playback mode: To search backward
In the rewind mode: To obtain high speed picture
"◁◁" is lit.

6 STOP
To stop any playback or recording.

7 PAUSE/STILL
During playback: Still picture
During recording: To interrupt recording.

8 REC
To start a recording.
- Press both buttons simultaneously.

9 ∨ ∧ (VTR)
To select the required programme position (TV station) of the VTR.

10 SLOW
For the slow motion playback function.

11 FF (FAST FORWARD)
In the stop mode: To fast forward the tape
In the playback mode: To search forward
In the fast forward mode: To obtain high speed picture
"▷▷" is lit.

12 PLAY
To start playback. "▷" is lit.

13 INDEX
For the index search function.

14 ∨ ∧ (TV)
To select the required programme position (TV station) of the TV.

15 VOLUME
To adjust the volume of the TV.

16 Display

17 Infra-red Transmitter
The programming data are transmitted from here to the VTR.

18 ∧ ∨ (Y)
- To programme a timer recording.
- To set the clock.
- To preset the TV stations.

19 DATE (M)
- To programme a timer recording.
- To set the clock.

20 TIMER REC
To turn the timer recording function on and off.
⏲ is lit or not lit.
Once operating timer recording function, the normal VTR operation is not possible unless this button is set to off.

21 G-CODE
For the G-Code programming.

22 CHECK
To check timer programmes while the Timer recording function is on.

23 RECORDING SP/LP
To select the tape speed desired for recording.
SP gives the best picture quality.
LP gives the longest recording time.

24 CONFIRM
To convert the data of a G-Code number.

25 INPUT SELECT
To select the "A1" external recording source.

26 AUDIO OUT
To select the desired sound mode.
At the every push of this button, the audio output mode changes as follows.

┌Stereo→Left→Right→Normal audio track┐
└──────────────────────────────────┘

The Left (L) and Right (R) Indicators show which sound mode is selected in the following way.

Stereo:	Both the Left (L) and Right (R) Indicators are lit.
Left:	The Left (L) Indicator is lit.
Right:	The Right (R) Indicator is lit.
Normal:	Both the Left (L) and Right (R) Indicators are not lit.

27 CLOCK/PRESET
- To set the clock.
- To set the TV stations.
- To set the manufacturer number of the TV.

28 RESET
To reset the tape counter (elapsed time) to "0:00.00".
- The tape counter is automatically reset to "0:00.00" when a video cassette is inserted.

29 No function.

30 TAPE SELECT
To set the cassette tape length in order to obtain correct indication of the remaining tape time.
E195: For E30, -60, -80, -120, -180 and -195 tapes
E240: For E240 tape
E260: For E260 tape

31 TRACKING/V-LOCK
For manual tracking adjustment
The + and − buttons are used to adjust the tracking when, for example, noise bars on the picture are better removed manually than by the automatic digital tracking control. After making a manual adjustment, press both buttons together to return to automatic digital tracking control.

For slow tracking adjustment
When noise bars appear during Still or Slow playback, switch over to slow playback and adjust with the − or − Button to reduce the noise bars.

For vertical locking adjustment
Use the + and − buttons to minimize any vertical jitter during still-picture playback.

32 Programme Position Selector Buttons
- To select the programme positions (1–42).

9: (9)
19: (-/--) → (1) → (9)

- To programme a G-Code number.

33 VTR/TV
To select the VTR mode or TV mode.

34 TRANSMIT
To transmit the data that has been set on the remote controller to the VTR.

35 CANCEL
To cancel the settings made for a timer recording.

36 OFF (H/M)
- To programme a timer recording.
- To set the clock.
- To preset the TV stations.
- To set the manufacturer number of the TV.

37 ON (D)
- To programme a timer recording.
- To set the clock.

Before Requesting Service

Before requesting service, check the following points once again.

VTR will not operate correctly			
SYMPTOM	**CAUSE**	**REMEDY**	**CHECKED**
VTR display is not illuminated.	Mains lead is not connected.	Reconnect mains lead to VTR.	
	POWER SAVE is set to ON.	Turn on the VTR or set **POWER SAVE** to OFF.	
VTR display is illuminated but VTR will not operate.	VTR is in timer mode.	Press **TIMER REC** to operate VTR manually.	
	Safety devices are operating.	Disconnect mains lead and wait for 1 minute. Reconnect mains supply and check functions.	
The Dew Indicator "⌓" is flashing.	Condensation may have formed.	Do not operate VTR for 1 hour. Refer to notes for dew condensation on page 30.	

Playback will not operate correctly			
SYMPTOM	**CAUSE**	**REMEDY**	**CHECKED**
Picture noisy or not in colour. Horizontal bars or lines run down the screen.	Tracking is not correct.	Adjust the tracking. See page 27.	
	Video heads are clogged or worn.	Consult your dealer for further advice.	

Recording will not operate correctly

SYMPTOM	CAUSE	REMEDY	CHECKED
"⊙⊙" indication flashes whenever recording is attempted.	Erasure prevention tab on cassette is broken off.	Use tape with intact erasure prevention tab, or cover tab hole with adhesive tape, if original recording is no longer required.	
Picture is recorded with noise or blank screen.	Aerial or aerial lead is defective.	Check aerial connection to VTR. See page 4. Check your normal TV picture. If there is no picture, check your aerial.	
	VTR is not correctly tuned.	Re-tune VTR. See page 8. Ensure input selector set to TV programme.	
Timer recording cannot be performed.	Clock or calendar is incorrectly set.	Check clock and calendar. Set to present time. (Note this is a 24 hour clock.) See page 6.	
	Recording start or end time settings are incorrect.	Set recording start and stop time correctly.	
	VTR is not set for timer recording.	Press **TIMER REC** after programming for timer recording.	
	G-Code programming is not set correctly.	Check remote controller and G-Code setting. Refer to pages 10, 11 and 21.	
AV external recordings cannot be made.	Input selector is not correctly set.	Select A1.	
	External AV connections are incorrect.	Check that connections for external video and audio source are correct. See page 23.	

Remote controller will not work correctly

SYMPTOM	CAUSE	REMEDY	CHECKED
Remote controller does not operate correctly.	Remote controller transmitter beam is not reaching VTR.	Ensure that remote controller is being pointed at VTR and that transmitter beam is not obstructed.	
	Distance is too far.	Use remote controller within 7 m of VTR. If this range is not possible, replace batteries.	
	Batteries are exhausted.	Replace batteries. Note precaution for replacement on page 13.	
	Batteries are incorrectly fitted with (+/−) reversed.	Fit batteries correctly as shown on page 13.	

Precautions

Please read these cautions before you operate this VTR.

Avoid Sudden Changes in Temperature

If the VTR is suddenly moved from a cold place to a warm place, moisture may form on the tape and inside the VTR. In this case, the Dew Indicator " " will flash on and off and the VTR will not operate.

Humidity and Dust

Avoid places where there is high humidity or much dust, which may cause damage to internal parts.

Do Not Obstruct the Ventilation Holes

The ventilation holes prevent abnormal increase in temperature. Do not block or cover these holes. Especially avoid covering the holes with soft materials such as cloth or paper.

Keep away from High Temperature

Keep the VTR away from extreme direct heat such as direct sunlight, heating radiators, or closed automobiles.

Keep Magnets away

Never bring a magnet or magnetized object near the VTR because it will adversely affect the performance of the VTR.

No Fingers or Other Objects Inside

Touching internal parts of this VTR is dangerous, and may cause serious damage to the VTR. Do not attempt to disassemble the VTR. There are no user serviceable parts inside.

Keep Water away

Keep the VTR away from flower vases, tubs, sinks, etc.
CAUTION: If liquids are spilled into the VTR, serious damage could occur. If you spill any liquid into the VTR, consult qualified service personnel.

Lightning

To avoid damage by lightning, disconnect the aerial plug from the VTR.

Cleaning the VTR

Wipe the VTR with a clean, dry cloth. Never use cleaning fluid, or other chemicals. And do not use compressed air to remove dust.

Stacking

Place the VTR in a horizontal position, and do not place anything heavy on it.

Video Head Clogging

The video heads place picture signals on the tape during recording and read picture signals from the tape during playback and they are, therefore, of critical importance for the picture quality. If the VTR is used over extremely long periods of time, these heads may become dirty and clogged. In such a case, the signals can no longer be recorded correctly, and the playback picture will be distorted accordingly. This is the case, for example, during the playback of a tape, the sound is reproduced normally, but no picture is seen, or the picture is greatly distorted. When such a symptom case occurs have the recorder checked by qualified service personnel.

If Dew Condensation Forms in the VTR

Condensation may form in the VTR if:

- The VTR is in a room when the heater has just been turned on.
- The VTR is in a room with steam or high humidity.
- The VTR is brought from cold surroundings into a well-heated room.
- The VTR is suddenly brought from cool surroundings, such as an air-conditioned room or car, to a place which is hot and humid.

When dew forms in the VTR:

The Dew Indicator " " on the Display will flash on and off and all the function buttons are made non-operational to protect the tape and the video heads. When the Dew Indicator flashes, wait until this indicator disappears.

- If dew condensation forms inside the VTR while the POWER Switch is off, it will turn on automatically and the Dew Indicator will flash on and off. As soon as the dew condensation has been dissolved, the VTR will turn itself off again.

Specifications

NV-HD70EA

Information for Your Safety

Power Source:	230 V AC 50–60 Hz		
Power Consumption:	28 watts		
Video Recording System:	2 rotary heads, helical scanning system		
Video Heads:	4 heads		
Tape Speed:	SP; 23.39 mm/sec.		
	LP; 11.7 mm/sec.		
Tape Format:	VHS tape		
Record/Playback Time:	SP; 240 min. with NV-E240		
	LP; 480 min. with NV-E240		
VIDEO			
Television System:	CCIR; 625 lines, 50 fields, PAL colour signal		
Modulation System:	Luminance; FM azimuth recording		
	Colour signal; converted subcarrier phase shift recording		
Input Level:	VIDEO IN (PHONO);	1.0 Vp-p,	75 ohm, terminated
Output Level:	VIDEO OUT (PHONO);	1.0 Vp-p,	75 ohm, terminated
	RF Modulated;	VHF channel 2 or 3,	75 ohm
AUDIO			
Input Level:	AUDIO IN (PHONO);	−10 dBV,	more than 47 kohm
Output Level:	AUDIO OUT (PHONO);	−8 dBV,	less than 1 kohm
Audio Track:	1 track (Normal-mono only), 2 channels (Hi-Fi sound-stereo)		
Video Horizontal Resolution:	Colour; more than 240 lines (SP)		
Dynamic Range:	Audio; more than 90 dB (Hi-Fi audio track)		
Audio Frequency Response:	20 Hz–20 kHz		
Wow and Flutter:	0.005% Wrms/Hi-Fi		
Operating Temperature:	5°C–40°C		
Operating Humidity:	35%–80%		
Weight:	5.0 kg		
Dimensions:	430 (W)×96 (H)×349 (D) mm		
Standard Accessories:	1 pc. Antenna Cable		
	1 pc. Remote Controller		
	2 pcs. "R6" size batteries		
	1 pc. AC Mains Lead		

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.